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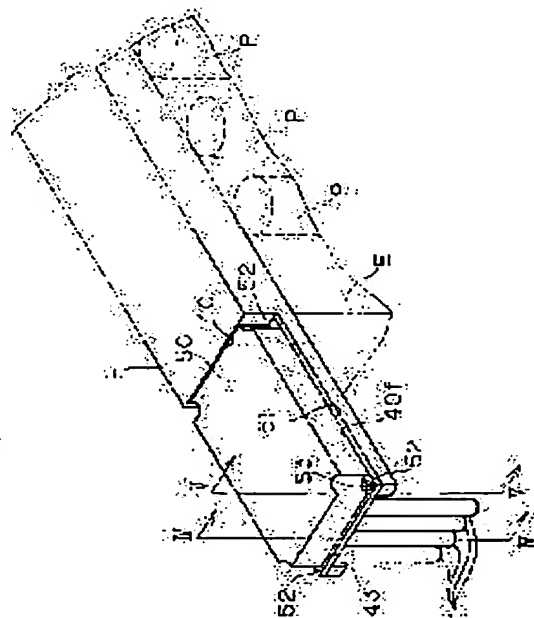
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## (54) STRUCTURE OF CONNECTION OF SHIELD WIRE

### (57)Abstract:

**PROBLEM TO BE SOLVED:** To provide a structure of connection of a shield wire that is superior in shielding effects upon noises generated in the shield wire.

**SOLUTION:** A recessed shield cover receiving part 40 is provided on one side of a conductive head cover H that is provided on the upper side of an engine body, and a connector 30 to be connected is provided in the nearly the center part of the bottom of the shield cover receiving part 40. A shield cover 50 is made of a conductive material and is formed into box-like shape whose bottom has an opening. The shielding cover 50 covers the peeled-off part of a shield 3 of a connector 10 connector-connected with the connector 30 and a shield wire 1 extending from the connector 10 and is secured to the shielding cover receiving part 40.



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CLAIMS

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[Claim(s)]

[Claim 1] It is the structure of the connection of the shielding wire by which a connector joint is carried out to the drive-system electric equipment article prepared in an engine. The shielding wire with which the covering section was prepared in the periphery enclosure at the pan while shielding was prepared in the periphery enclosure of an electric wire, predetermined length was covered from the edge, and said shielding and the covering section exfoliated, It is prepared in one flank of the conductive cylinder-head cover arranged after having been grounded by the engine bottom, the connector attached in the edge of said shielding wire, and. By the connector joint with said connector The connected connector for connecting said electric wire to said drive-system electric equipment article, The shielding covering receiving part which has the annular abutment formed in it as enclosed said connected connector in one flank of a preparation and said conductive cylinder-head cover is prepared. Shielding covering formed in the condition which has the opening periphery section which corresponds with said annular abutment with a conductive ingredient The exfoliation part of said shielding of said shielding wire which extends from said connector by which the connector joint was carried out to said connected connector, and its connector with a wrap Structure of the connection of the shielding wire attached in said shielding covering receiving part as the opening periphery section was made to contact said annular abutment.

[Claim 2] Structure of the connection of shielding wire where are the structure of the connection of a shielding wire according to claim 1, and the notching insertion section in which insertion arrangement is possible was formed in the side edge section of said shielding covering receiving part from the side of said shielding covering receiving part in said shielding wire.

[Claim 3] Two or more tubed parts outer fitting fixed so that it might be the structure of the connection of a shielding wire according to claim 2 where said two or more shielding wire extends and each of that shielding might be electrically contacted from said connector at the edge side of each of said shielding wire, So that said each shielding wire which fixed [ outer fitting ] each [ these ] tubed part may be held with the posture in which insertion arrangement is possible at said notching insertion circles So that it may have further the conductive bracket object which has the plate-like part which carries out connection support of each tubed part concerned and the plate-like part of said bracket object may contact the periphery section of said notching insertion section electrically at least Structure of the annular abutment of said shielding covering receiving part, and the connection of the shielding wire pinched between the opening periphery sections of said shielding covering.

[Claim 4] Structure of the connection of shielding wire where are the structure of the connection of a shielding wire according to claim 3, and the opening periphery section of said shielding covering contacts the field where the plate-like part of said conductive bracket object contacts the periphery section of said notching insertion section from the field of the opposite side at the plate-like part concerned.

[Claim 5] Structure of the connection of the shielding wire supported after it was built over the \*\* bracket object which is the structure of the connection of a shielding wire according to claim 4, and was formed in side opening of said notching insertion section with the conductive ingredient where said shielding covering receiving part is contacted electrically, and the plate-like part of said conductive bracket object had contacted the opening periphery section of said shielding covering electrically from the opposite side with the \*\* bracket object.

[Claim 6] Structure of the connection of shielding wire where were the structure of the connection of a shielding wire according to claim 5, and it was annularly placed between them by the sealant as said connected connector and the periphery of each of said tubed part were enclosed between the opening periphery section of said shielding covering, the plate-like part of the annular abutment of said shielding

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covering receiving part, and a conductive bracket object, or the \*\* bracket object.

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[Translation done.]

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] this invention -- internal combustion engines, such as an automobile, -- setting -- for example, the electromagnetism of a bulb -- it is related with the structure of the connection of the shielding wire used for wiring to a drive valve etc.

[0002]

[Description of the Prior Art] In recent years, an internal combustion engine's electronics control-ization progresses, and various electronic autoparts are arranged by the internal combustion engine, and many wiring material to each electronic autoparts is \*\*\*\*(ed).

[0003] by the way, the connection place of wiring material -- the electromagnetism of a bulb -- when it is actuators, such as a drive valve, the high voltage for an actuator drive will be intermittently impressed to the wiring material concerned, and the noise which this produced may spread to other sensors and harnesses which carry out proximal to wiring material.

[0004] For this reason, the shielding wire which shielded the braid layer etc. is used for the perimeter of an electric wire as wiring material for the drive circuits of an actuator.

[0005] It faces connecting this shielding wire to the above actuators, and terminal treatment as shown in drawing 13 is performed, for example.

[0006] That is, this shielding wire 100 forms in the periphery enclosure of two or more electric wires 101 the shielding 102 which consists of a braid layer, and forms the covering section 103 by insulating resin in that periphery further.

[0007] At the edge of shielding wire 100, predetermined length was covered, it scalped the covering section 103, and shielding 102 and two or more electric wires 101 have extended into the part which exfoliated.

[0008] Among these, it is pulled out to the side of shielding wire 100, and connects with round-head terminal 103b through other electric-wire 103a, and the extending shielding 102 is grounded through this round-head terminal 103b.

[0009] Moreover, each extending electric wire 101 is led to a connector 105, and is suitably connected to each terminal in the connector concerned. And the electric wire 101 in shielding wire 100 serves as a configuration electrically connected to the actuator in an engine by connecting the connector 105 to the connector in which it was prepared at the engine side.

[0010]

[Problem(s) to be Solved by the Invention] However, since the terminal of a connector 105 is stuck to each electric wire 101 by pressure, it is necessary to scalp the covering section 103 and shielding 102 over predetermined length, and to change each electric wire 101 into a scattering condition in the connection of the above-mentioned shielding wire. For this reason, at the edge of each electric wire 101, the part which is not shielded with shielding 102 will arise and a noise will leak from the part concerned.

[0011] Then, the technical problem of this invention is to offer the structure of the connection of shielding wire excellent in the noise shielding effect generated from shielding wire.

[0012]

[Means for Solving the Problem] That the above-mentioned technical problem should be solved the structure of the connection of a shielding wire according to claim 1 It is the structure of the connection of the shielding wire by which a connector joint is carried out to the drive-system electric equipment article prepared in an engine. The shielding wire with which the covering section was prepared in the periphery enclosure at the pan while shielding was prepared in the periphery enclosure of an electric wire, predetermined length was covered from the edge, and said shielding and the covering section exfoliated, It is

prepared in one flank of the conductive cylinder-head cover arranged after having been grounded by the engine bottom, the connector attached in the edge of said shielding wire, and. By the connector joint with said connector The connected connector for connecting said electric wire to said drive-system electric equipment article, The shielding covering receiving part which has the annular abutment formed in it as enclosed said connected connector in one flank of a preparation and said conductive cylinder-head cover is prepared. Shielding covering formed in the condition which has the opening periphery section which corresponds with said annular abutment with a conductive ingredient With a wrap, the exfoliation part of said shielding of said shielding wire which extends from said connector by which the connector joint was carried out to said connected connector, and its connector is attached in said shielding covering receiving part, as the opening periphery section is made to contact said annular abutment.

[0013] In addition, the notching insertion section in which insertion arrangement is more possible than the side of said shielding covering receiving part may be formed in the side edge section of said shielding covering receiving part in said shielding wire like claim 2 publication.

[0014] Moreover, if it is when two or more shielding wire extends from a connector Two or more tubed parts according to claim 3 outer fitting fixed like so that each of that shielding might be contacted electrically at the edge side of each of said shielding wire, So that said each shielding wire which fixed [ outer fitting ] each [ these ] tubed part may be held with the posture in which insertion arrangement is possible at said notching insertion circles So that it may have further the conductive bracket object which has the plate-like part which carries out connection support of each tubed part concerned and the plate-like part of said bracket object may contact the periphery section of said notching insertion section electrically at least It is good also as a configuration pinched between the opening periphery sections of the annular abutment of said shielding covering receiving part, and said shielding covering.

[0015] Furthermore, the opening periphery section of said shielding covering may be [ like ] in contact with the field according to claim 4 where the plate-like part of said conductive bracket object contacts the periphery section of said notching insertion section from the field of the opposite side at the plate-like part concerned.

[0016] Moreover, where said shielding covering receiving part is contacted electrically, it may be built over the \*\* bracket object according to claim 5 formed in side opening of said notching insertion section with the conductive ingredient like, and with the \*\* bracket object, the plate-like part of said conductive bracket object may be supported, where the opening periphery section of said shielding covering is electrically contacted from the opposite side.

[0017] Furthermore, like claim 6 publication, as said connected connector and the periphery of each of said tubed part are enclosed between the opening periphery section of said shielding covering, the plate-like part of the annular abutment of said shielding covering receiving part, and a conductive bracket object, or a \*\* bracket object, it may be annularly placed between them by the sealant.

[0018]

[Embodiment of the Invention] The structure of the connection of the shielding wire of the gestalt of the 1st operation concerning this invention is explained below {the gestalt of the 1st operation}.

[0019] The structure of the connection of this shielding wire assumes the configuration which carries out the connector joint of the shielding wire 1 to the drive-system electric equipment article P in which it is prepared by the engine, as shown in drawing 1 - drawing 5 .

[0020] Here, as a drive-system electric equipment article P prepared in an engine, it is the drive-system electric equipment article prepared in the engine cylinder head etc., and a thing with the need of impressing high-pressure driver voltage through shielding wire 1 is assumed. the bulb prepared in the cylinder head as a drive-system electric equipment article P with the gestalt of this operation -- electromagnetism -- the electromagnetism which was made to carry out a closing motion drive with a coil -- the drive valve P is assumed. As other drive-system electric equipment articles, the injector for example, in a direct injection diesel power plant etc. is assumed.

[0021] The structure of the connection of this shielding wire is equipped with the connected connector 30 roughly prepared in the shielding wire 1 of plurality (the gestalt of this operation 4), the connector 10 attached in the edge of each shielding wire 1, and one flank of the conductive cylinder-head cover H arranged by the bottom on engine E containing the cylinder head etc.

[0022] The common electric wires 2 with which said each shielding wire 1 formed the covering section in the circumference of lead wire gather, and while shielding 3 is formed in the periphery enclosure of this electric wire 2 that gathered, it comes to form the covering sections 4, such as a product made of insulating resin, in a periphery enclosure at that pan. Said shielding 3 is formed by \*\*\*\*\* (ing) for example, a thin

metal wire etc. In addition, although the gestalt of this operation explains the configuration equipped with two or more shielding wire 1, even if it is in the configuration equipped with the single shielding wire 1, it is applicable similarly. Moreover, although each shielding wire 1 is considered as the configuration equipped with two or more electric wires 2, it may be the shielding wire 1 equipped with the single electric wire 2. [0023] Moreover, predetermined length was covered from the edge of this shielding wire 1, shielding 3 and the covering section 4 exfoliated, that tip side was covered at predetermined length, and each electric wire 2 has extended in the condition [ \*\*\*\* / un-] (refer to drawing 2 and drawing 3 ).

[0024] As shown in drawing 2 and drawing 3 , a connector 10 is attached in the edge of each above-mentioned shielding wire 1, and more specifically, it has the connection regio oralis 12 in the lower limit section while it has the electric-wire induction 11 in the back end section. The connector terminal of an illustration abbreviation is arranged in the connection regio oralis 12, and each connector terminal concerned will be connected to the connected connector terminal in the connected connector 30 by connecting the connection regio oralis 12 to the connected connector 30 (it mentioning later) of the other party.

[0025] And a connector 10 will be attached in the edge of each shielding wire 1 by introducing each electric wire 2 of each above-mentioned shielding wire 1 in a connector 10 through the above-mentioned electric-wire induction 11, and connecting with a connector terminal electrically with sticking by pressure, soldering, etc. suitably in the interior.

[0026] Moreover, as shown in drawing 2 and drawing 3 , the connected connector 30 is formed in one flank of the conductive cylinder-head cover H, and a connector joint with the above-mentioned connector 10 constitutes each electric wire 2 possible [ connection with the drive-system electric equipment article P ].

[0027] More specifically, the connected connector 30 is laid underground in the shielding covering receiving part 40 concerned, as it is made to expose above the shielding covering receiving part 40 which mentions a part for the connected upside regio oralis later. In said connected regio-oralis part, the connector terminal by the side of a connector 10 and the connected connector terminal in which fitting connection is possible are arranged. Each \*\*\*\*\* connector terminal It connects with the above-mentioned drive-system electric equipment article P electrically through the bus bar (the circuit object of the predetermined pattern which pierced the thick metal plate in the predetermined configuration, and crooked for it and formed it in it: with the gestalt of this operation, screw fixation is carried out to engine E) of an illustration abbreviation through the inside of the conductive cylinder-head cover H.

[0028] And each electric wire 2 of each shielding wire 1 will be electrically connected to each drive-system electric equipment article P through each connector terminal, each \*\*\*\*\* connector terminal, and a bus bar by carrying out the connector joint of the above-mentioned connector 10 to the connected connector 30.

[0029] Moreover, the shielding covering receiving part 40 which has 40f of annular abutments formed in it as enclosed said connected connector 30 in one flank of the above-mentioned conductive cylinder-head cover H is formed.

[0030] With the gestalt of this operation, while turning one flank of the conductive cylinder-head cover H to the method of the outside of 1 flank of engine E and making it project, more specifically, the shielding covering receiving part 40 is formed by forming in an internal-corner-like crevice the part made to project. Moreover, the connected connector 30 is arranged in the abbreviation center section of the base of the shielding covering receiving part 40 in the shape of laying under the ground, and the part which encloses said connected connector 30 among the bases of the shielding covering receiving part 40 is formed in 40f of plain-view substantially rectangle-shaped annular abutments.

[0031] And when the connector joint of the above-mentioned connector 10 is carried out to the connected connector 30, the connector 10 concerned will be arranged in 40f of annular abutments of the shielding covering receiving part 40. Incidentally, the part which constitutes the shielding covering receiving part 40 at least among the conductive cylinder-head covers H is formed with conductive ingredients, such as a metal, and it connects with an engine E<sub>part</sub> electrically, and it is grounded.

[0032] In addition, with the gestalt of this operation, while forming screw insertion hole 10a in the plane view abbreviation center section of the connector 10, screw hole 30a is formed in the part corresponding to said screw insertion hole 10a of the connected connector 30. Moreover, while forming the flange 14 which projects towards outwardness along the direction of a periphery of the lower part of a connector 10 and forming screw insertion hole 10b in each corner of the flange 14 concerned, respectively, screw hole 40a is formed in each part corresponding to said each screw insertion hole 10b among 40f of annular abutments. And where a connector joint is carried out to the connected connector 30, this connector 10 While making it screw in screw hole 30a formed through the screw S1 at the connected connector 30 side in the above-

mentioned screw insertion hole 10a As it is made to screw in screwhole 40a formed at 40f side of annular abutments through two or more screws S2 (refer to drawing 2 ) in screw insertion hole 10b, the connection condition concerned is made to be held more certainly.

[0033] Moreover, said flange 14 and 40f of annular abutments contact mutually around the connected connector 30, and he makes a sealant 39 intervene annularly between a flange 14 and 40f of annular abutments, and is trying to prevent scattering of the oil from the engine E (especially cylinder head) side with the gestalt of this operation.

[0034] Moreover, the shielding covering 50 is attached in the above-mentioned shielding covering receiving part 40.

[0035] The shielding covering 50 is formed in drawing 1 - drawing 3 at the condition which has 40f of said annular abutments, and the corresponding opening periphery section 51 with conductive ingredients, such as a metal, so that it may be shown.

[0036] With the gestalt of this operation, shielding covering 50 is made into the shape configuration of whole \*\*\*\* which can be held in said shielding covering receiving part 40, carries out opening of the pars basilaris ossis occipitalis, and forms the opening periphery section 51 of the shape of an abbreviation rectangle corresponding to 40f of annular abutments of the shape of said abbreviation rectangle.

[0037] Among the shielding wire 1 which extends from the connector 10 by which the connector joint was carried out to the above-mentioned connected connector 30, and its connector 10, with a wrap, the exfoliation part (extension part of each electric wire 2) of shielding 3 is attached in the shielding covering receiving part 40, as this shielding covering 50 makes that opening periphery section 51 contact 40f of said annular abutments.

[0038] That is, with the gestalt of this operation, if the connector joint of the above-mentioned connector 10 is carried out to the connected connector 30, the connector 10 concerned will be arranged in 40f of annular abutments. Moreover, in the shielding wire 1 which extends from this connector 10, predetermined length was covered near the part pulled out from the connector 10 concerned, and shielding 3 has exfoliated. And as the shielding covering 50 covers said connector 10 and the shielding 3 exfoliation part of the shielding wire 1 from the upper part, it will be attached in the shielding covering receiving part 40.

[0039] In addition, with the gestalt of this operation, while forming a part for the method longitudinal side of four of the shielding covering 50 in the shape of a concave along each of that side direction and forming a flange 52 in each of that lower part, screw insertion hole 52a is formed in each flange 52, and screwhole 40b is further formed in the part corresponding to each screw insertion hole 52a concerned among the above-mentioned shielding covering receiving parts 40. And in case the shielding covering 50 is attached in the shielding covering receiving part 40, he makes screwhole 40b screw in said each screw insertion hole 52a through a screw S3 (to refer to drawing 3 ), and is trying to hold the attachment condition to the shielding covering receiving part 40 of the shielding covering 50.

[0040] In addition, the shielding covering 50 is grounded by the shielding covering receiving part 40 using the configuration which a screw S3 screws in screwhole 40b through contact to 40f of annular abutments of the shielding covering receiving part 40.

[0041] Moreover, with the gestalt of this operation, the next configuration is adopted as a configuration which pulls out each shielding wire 1 from the space during the shielding covering 50 to the shielding covering receiving part 40 and the exterior.

[0042] That is, as shown in drawing 2 - drawing 4 , the notching insertion section 43 in which insertion arrangement is more possible than the side of the shielding covering receiving part 40 is formed in the side edge section of the above-mentioned shielding covering receiving part 40 in each shielding wire 1.

[0043] The notching insertion section 43 of a configuration which it has [ section ] the shape of a long plane view abbreviation ellipse, and made the method of outside specifically turn and carry out opening of the part for the long side of the one side of it to the side edge section of the shielding covering receiving part 40 which is the protrusion edge part of the conductive cylinder-head cover H which projects in the side of engine E along the direction where the side edge section of the shielding covering receiving part 40 is prolonged is formed. Along the direction where said side edge section is prolonged, with two or more gestalten of (book operation, the notching insertion section 43 has the die-length dimension which can be inserted in where the shielding wire 1 of 4) is arranged in parallel in a single tier, and has overall depth only with a bigger predetermined some dimension than the diameter dimension of the shielding wire 1 concerned. And where insertion arrangement of each shielding wire 1 is carried out into the notching insertion section 43, carrying out a parallel arrangement from the side of the shielding covering receiving part 40, attachment to the shielding covering receiving part 40 of the above-mentioned shielding covering 50 is enabled. In this



condition, each shielding wire 1 will pass along the above-mentioned notching insertion section 43 between the opening periphery sections 51 of 40f of annular abutments, and the shielding covering 50, and will be pulled out outside.

[0044] Moreover, with the gestalt of this operation, the next configuration is adopted as a configuration which grounds the shielding 3 of each shielding wire 1.

[0045] Namely, as the structure of the connection of this shielding wire 1 is shown in drawing 2 - drawing 5 Two or more tubed parts 56 outer fitting fixed so that each of that shielding 3 might be contacted electrically at the edge side of each shielding wire 1, It has further the conductive bracket object 55 which has the plate-like part 57 which carries out connection support of each tubed part 56 concerned so that each shielding wire 1 which fixed [ outer fitting ] each [ these ] tubed part 56 may be held with the posture in which insertion arrangement in said notching insertion section 43 is possible. And the plate-like part 57 has 40f of annular abutments of the shielding covering receiving part 40, and composition pinched between the opening periphery sections 51 of the shielding covering 50 so that the periphery section of said notching insertion section 43 may be contacted electrically at least.

[0046] The conductive bracket object 55 is formed with conductive ingredients, such as a metal, and, more specifically, two or more tubed parts (at the gestalt of this operation, it is four in all to the number of shielding wire 1) 56 come to protrude upward with a juxtaposition posture to the long tabular plate-like part 57 along with the longitudinal direction.

[0047] Said plate-like part 57 is formed in the long tabular one of a bigger configuration than the plane view configuration of the above-mentioned notching insertion section 43. moreover, the plane view configuration corresponding to [ among the above-mentioned shielding covering receiving parts 40 ] the periphery section of the notching insertion section 43 with the plane view configuration of a plate-like part 57 -- and the thickness dimension of the plate-like part 57 concerned and abbreviation -- the positioning hold concave step 44 of the same depth dimension is formed. And as a plate-like part 57 is held in the positioning hold concave step 44, it can lay on the shielding covering receiving part 40. Thus, in the condition of having been laid, the plate-like part 57 is in the condition that it can contact, electrically at the periphery section of the notching insertion section 43, and further, if attachment immobilization of the shielding covering 50 is carried out in this condition at the shielding covering receiving part 40 The opening periphery section 51 of the shielding covering 50 will contact the plate-like part 57 concerned from the top face (the field where a plate-like part 57 contacts the base of the positioning hold concave step 44 is a field of the opposite side) of the plate-like part 57 of the conductive bracket object 55 (refer to drawing 4 ).

[0048] Predetermined spacing was opened in the above-mentioned plate-like part 57, it was fixed to it, and each tubed part 56 is formed in the abbreviation tubed which has an inside diameter corresponding to shielding 3 part of shielding wire 1. And it will be outer fitting fixed to the shielding wire 1 concerned in the condition of having contacted electrically [ a tubed part 56 ] to shielding 3 by covering predetermined length in the covering section 4 of shielding wire 1, exfoliating, exposing shielding 3, outer fitting carrying out of the tubed part 56 to the exposure part of the shielding 3 concerned, and fixing with caulking etc. From the part arranged on the notching insertion section 43 among the above-mentioned plate-like parts 57, as each tubed part 56 projects up, juxtaposition formation is carried out. And as hold arrangement of the above-mentioned plate-like part 57 was carried out into the positioning hold concave step 44, where the conductive bracket object 55 is attached in the side edge section of the shielding covering receiving part 40, each shielding wire 1 fixed in each tubed part 56 is pulled out caudad, and has composition which can extend outside through the notching insertion section 43 from the plate-like part 57. In addition, it is desirable from a viewpoint of waterproofing-proof that each tubed part 56 carries out insertion molding (mold molding) of the part by which it was outer fitting carried out to shielding wire 1 into resin, such as urethane.

[0049] With this configuration, while the shielding 3 of each shielding wire 1 is electrically connected to each tubed part 56 of the conductive bracket object 55, the plate-like part 57 of the conductive bracket object 55 will be in the condition of having contacted the periphery section of the notching insertion section 43 electrically at least (refer to drawing 4 and drawing 5 ). For this reason, shielding of each shielding wire 1 will be grounded through a plate-like part 57 from each tubed part 56, the periphery section 40, i.e., the shielding covering receiving part, of the notching insertion section 43.

[0050] In addition, with the gestalt of this operation, while screw insertion hole 57a is formed in the both ends of a plate-like part 57, respectively Screw hole 44a is formed in the part corresponding to said each screw insertion hole 57a among the both ends of the positioning hold concave step 44. The conductive bracket object 55 in the side edge section of the shielding covering receiving part 40 by attachment \*\*\*\*\* He is trying to hold said attachment condition more certainly by making screw hole 44a screw through screw



S4 of a pair in screw insertion hole 57a (refer to drawing 3 and drawing 5 ).

[0051] Thus, the structure of the connection of the constituted shielding wire 1 is assembled as follows.

[0052] First, predetermined length is covered from the edge of each shielding wire 1, shielding 3 and the covering section 4 are exfoliated, predetermined length is covered and each electric wire 2 is exposed in the condition of not banding together. Furthermore, the covering section 4 is continued and exfoliated in predetermined length, and predetermined length is covered and is made to expose shielding 3. And in each tubed part 56 of the conductive bracket object 55, it carries out [ outer fitting ] of each tubed part 56 concerned to the exposed part of shielding 3 among shielding wire 1 through each shielding wire 1, and fixes with the means of caulking etc. Moreover, a connector 10 is attached in the edge of each shielding wire 1 by connecting to the connector terminal in a connector 10 each electric wire 2 exposed to the edge of each shielding wire 1 in the state of un-banding together (refer to drawing 3 ).

[0053] Next, a connector 10 is connected to the connected connector 30, and while making it screw in screw hole 30a formed through the screw S1 at the connected connector 30 side in the above-mentioned screw insertion hole 10a, it is made to screw in screw hole 40a formed through two or more screws S2 at the conductive cylinder-head-cover H side in screw insertion hole 10b. Here, using the screw S1 larger [ one ] in the center in addition to two or more screw S2 is based on the following reason. That is, in the connection of this shielding wire 1, there are many terminals and the high voltage, therefore a connector 10 are enlarged. For this reason, it faces connecting this connector 10 to the connected connector 30, a big insertion load is needed, and the first immobilization with a screw S1 is needed.

[0054] To making the above-mentioned screws S1 and S2 screw and coincidence, moreover, or before and after this Among each shielding wire 1, rather than the above-mentioned conductive bracket object 55 a lower part Insertion arrangement is carried out from the side into the notching insertion section 43 of the shielding covering receiving part 40. As hold arrangement of the plate-like part 57 is carried out into the positioning hold concave step 44, the conductive bracket object 55 is attached in the side edge section of the shielding covering receiving part 40, and screw hole 44a is made to screw through screw S4 in screw insertion hole 57a (refer to drawing 2 - drawing 5 ).

[0055] If the shielding covering 50 is attached in the shielding covering receiving part 40 as a connector 10 and the shielding 3 exfoliation part of the shielding wire 1 are covered from the upper part, and screw hole 40b is made to screw it in each screw insertion hole 52a through a screw S3 finally, the structure of the connection of this shielding wire 1 will be assembled (refer to drawing 1 - drawing 3 ).

[0056] According to the structure of the connection of the shielding wire 1 constituted as mentioned above, the shielding covering receiving part 40 which has 40f of annular abutments formed in it as enclosed the connected connector 30 in one flank of the conductive cylinder-head cover H is formed. The shielding covering 50 formed in the condition which has the opening periphery section 51 which corresponds with 40f of annular abutments with a conductive ingredient The exfoliation part of the shielding 3 of the shielding wire 1 which extends from the connector 10 by which the connector joint was carried out to the connected connector 30, and its connector 10 with a wrap Since it is attached in the shielding covering receiving part 40 as the opening periphery section 51 is made to contact 40f of annular abutments, Since the exfoliation part of the shielding 3 of the shielding wire 1 which extends from a connector 10 covers and is wrapped in in the shielding covering receiving part 40 of the conductive cylinder-head cover H, and the shielding covering 50 The noise generated from shielding wire 1 is covered with the shielding covering receiving part 40 and the shielding covering 50, and is excellent in a noise shielding effect.

[0057] As derivative effectiveness, since the connection part of a connector 10 and the connected connector 30 and the part to which the electric wire 2 became scattering can be covered in the shielding covering 50, they are contributed also to improvement in appearance.

[0058] Moreover, since the shielding covering 50 can be attached to the shielding covering receiving part 40 as insertion arrangement of the shielding wire 1 is carried out at the notching insertion section 43 and it pulls out outside out of the shielding covering 50 if the notching insertion section 43 in which insertion arrangement is more possible than the side of the shielding covering receiving part 40 is formed in the side edge section of the shielding covering receiving part 40 for shielding wire 1, it excels to the assembly nature of the connection of this shielding wire 1.

[0059] Especially, since what is necessary is not to consider as a big opening configuration which makes the connector 10 attached in the edge of shielding wire 1 insert in it since insertion arrangement of each shielding wire 1 is more possible than the side of the shielding covering receiving part 40 in the notching insertion section 43, and just to form in the opening configuration of extent which can insert in each shielding wire 1, the miniaturization of the notching insertion section 43, as a result the miniaturization of

the structure of this connection are attained.

[0060] By the way, since every one shielding 102 of each shielding wire 100 was grounded using round-head terminal 103b etc. with the configuration of the conventional example as shown in drawing 13, the activity which grounds the shielding 102 of two or more shielding wire 100 was very complicated, and the configuration was also complicated.

[0061] on the other hand, with the structure of the connection of this shielding wire 1 Two or more tubed parts 56 outer fitting fixed so that each of that shielding 3 might be contacted electrically at the edge side of each shielding wire 1, So that each shielding wire 1 fixed by each [ these ] tubed part 56 may be held with the posture in which insertion arrangement in the notching insertion section 43 is possible So that it may have further the conductive bracket object 55 which has the plate-like part 57 which carries out connection support of each tubed part 56 and the plate-like part 57 of the conductive bracket object 55 may contact the periphery section of the notching insertion section 43 electrically at least Since it is considering as the configuration pinched between the opening periphery sections 51 of 40f of annular abutments of the shielding covering receiving part 40, and the shielding covering 50, Since the shielding 3 of each shielding wire 1 will be grounded by the shielding covering receiving part 40 via said plate-like part 57 from each tubed part 56 of the conductive bracket object 55, the shielding 3 of two or more shielding wire 1 can be easily grounded with a simple configuration.

[0062] Moreover, like the gestalt of this operation, since the opening periphery section 51 of the shielding covering 50 be in contact with the plate-like part 57 concerned from the top face of the plate-like part 57 of the conductive bracket object 55, the plate-like part 57 concerned can be press now against the base of the positioning hold concave step 44, can make small contact resistance between the shielding covering receiving parts 40 containing the periphery section of the conductive bracket object 55 and the notching insertion section 43 as much as possible, and can raise the noise electric shielding function of the shielding 3 of shielding wire 1.

[0063] The structure of the connection of the shielding wire 1 concerning {the gestalt of the 2nd operation}, next the gestalt of implementation of the 2nd of this invention is explained. In addition, in explanation of the gestalt of operation of \*\*\*\* 2, the explanation is omitted using the same sign about a component like the thing of the gestalt of implementation of the above 1st.

[0064] Side opening of the notching insertion section 43 is built over the \*\* bracket object 60 formed with the conductive ingredient where the shielding covering receiving part 40 is contacted electrically, and structure of the connection of this shielding wire 1 is considered as the configuration by which the plate-like part 57 of the conductive bracket object 55 was supported from the opposite side in the opening periphery section 51 of the shielding covering 50 with that \*\* bracket object 60, as shown in drawing 6 - drawing 10.

[0065] More specifically, the \*\* bracket object 60 is considered as the configuration which equipped it with the tie-down plate-like section 62 which can be attached, and the receiving part 61 of the tie-down plate-like section 62 which protruded on the field side on the other hand as blockaded side opening of the above-mentioned notching insertion section 43 in the side edge section of the shielding covering receiving part 40 which is the protrusion edge part of the conductive cylinder-head cover H which projects in the side of engine E.

[0066] Said tie-down plate-like section 62 is formed in the long tabular one which has the dimension of a bigger longitudinal direction than the side opening width method of the notching insertion section 43, and the both ends are formed in a part for the both-ends flank of the notching insertion section 43 possible [ attachment immobilization ] in the condition of having made it build the opening concerned.

[0067] With the gestalt of this operation, while forming screw insertion hole 62a in the both ends of the tie-down plate-like section 62, respectively By forming screw hole 43a in the both-ends lateral part of the notching insertion section 43, respectively among the extroversion side faces of the lateral portion of the shielding covering receiving part 40, and making said each screw hole 43a screw in said each screw insertion hole 62a through the screw S5 of a pair Where the tie-down plate-like section 62 is electrically contacted to the shielding covering receiving part 40, it constitutes possible [ attachment ] in side opening of the notching insertion section 43.

[0068] a receiving part 61 -- the side opening width method of the notching insertion section 43, and abbreviation -- it is formed in the shape of [ of the same die-length dimension ] an oblong long column. And where the above-mentioned tie-down plate-like section 62 is attached in side opening of the notching insertion section 43, it is constituted possible [ arrangement in side opening of the notching insertion section 43 concerned ].

[0069] Moreover, the top face of this receiving part 61 is in the condition arranged in opening of said

notching insertion section 43, and it is constituted so that it may be arranged in the same height location as the base of the positioning hold concave step 44, i.e., the location by the thickness dimension of a plate-like part 57 lower than 40f of annular abutments. With the gestalt of this operation, since the rising wood of the tie-down plate-like section 62 is made to be arranged in the same height location as 40f of annular abutments, the top face of a receiving part 61 will be arranged in the location from which it fell in the shape of a stage from the rising wood of the tie-down plate-like section 62.

[0070] And a receiving part 61 is arranged in side opening of the notching insertion section 43. If the above-mentioned conductive bracket object 55 is attached in the side edge section of the shielding covering receiving part 40 after attaching this assistant bracket object 60 in the side edge section of the shielding covering receiving part 40 In the opening periphery section 51 of the shielding covering 50, the top face of a receiving part 61 becomes like so that the inferior surface of tongue of the plate-like part 57 of the conductive bracket object 55 may be supported from the lower part of the opposite side (refer to drawing 8 and drawing 9 ).

[0071] According to the structure of the connection of the shielding wire 1 concerning the gestalt of this 2nd operation Side opening of the notching insertion section 43 is built over the \*\* bracket object 60 formed with the conductive ingredient where the shielding covering receiving part 40 is contacted electrically. With the \*\* bracket object 60 Since the plate-like part 57 of the conductive bracket object 55 is supported in the condition of having contacted electrically [ the opening periphery section 51 of the shielding covering 50 ] from the opposite side, Through the \*\* bracket object 60, it will connect with the shielding covering receiving part 40 electrically, the conductive bracket object 55 will be grounded, and touch-down of the shielding 3 of each shielding wire 1 can be ensured.

[0072] The structure of the connection of the shielding wire 1 concerning {the gestalt of the 3rd operation}, next the gestalt of implementation of the 3rd of this invention is explained. In addition, in explanation of the gestalt of operation of \*\*\*\* 3, the explanation is omitted using the same sign about a component like the thing of the gestalt of implementation of the above 2nd.

[0073] As the connected connector 30 and the periphery of each tubed part 56 are enclosed between the opening periphery section 51 of the shielding covering 50, and the plate-like part 57 of 40f of annular abutments of the shielding covering receiving part 40, and the conductive bracket object 55 or the \*\* bracket object 60, the sealant 65 is made to be annularly placed between them with the gestalt of this 3rd operation.

[0074] As shown in drawing 11 and drawing 12 , as the connected connector 30 and the periphery of each tubed part 56 are enclosed, specifically, the sealants 65, such as silicone, are formed on the above-mentioned shielding covering receiving part 40 abbreviation rectangle annular. Here, a concave 200 is formed in 40f of annular abutments abbreviation rectangle annular, and in this concave 200, as a seal component is applied, the sealant 65 is formed (refer to drawing 12 ). This sealant 65 is in the condition arranged in the concave 200, and intervenes at a compression condition between 40f of annular abutments of the opening periphery section 51 of the shielding covering 50, and the shielding covering receiving part 40.

[0075] In addition, the sealant 65 is formed and the opening periphery section 51 of the above-mentioned shielding covering 50 contacts on the rising wood of the tie-down plate-like section 62 so that it may be the periphery side of the positioning hold concave step 44 and may pass along the rising wood top of the tie-down plate-like section 62 by the part in which the notching insertion section 43 of the shielding covering receiving part 40 was formed. In addition, after attaching the conductive bracket object 55 in the shielding covering receiving part 40, a sealant 65 may be arranged on the plate-like part 57.

[0076] And when the shielding covering 50 is attached in the shielding covering receiving part 40, a sealant 65 will intervene between the opening periphery section 51 of the shielding covering 50, and the plate-like part 57 of 40f of annular abutments of the shielding covering receiving part 40, and the conductive bracket object 55 or the \*\* bracket object 60.

[0077] According to the structure of the connection of the shielding wire 1 concerning the gestalt of this 3rd operation Between the opening periphery section 51 of the shielding covering 50, the plate-like part 57 of 40f of annular abutments of the shielding covering receiving part 40, and the conductive bracket object 55, or the \*\* bracket object 60 Since the sealant 65 intervenes annularly as the connected connector 30 and each tubed part 56 are enclosed, permeation of the water passing through between them can be prevented (in addition, the slot 200 is established also in the top face of the \*\* bracket 60).

[0078] Since permeation of the water to each tubed part 56 can be prevented especially, the shielding 3 of shielding wire 1 and degradation of each tubed part 56 are prevented, the electric connection between both is kept more certain and degradation of the shielding engine performance can be prevented.

[0079] Moreover, since the sealant 65 is formed as a seal component is applied to the concave 200 formed in

40f of annular abutments, the formation can be performed easily.

[0080] And where the shielding covering 50 is attached in the shielding covering receiving part 40, and a sealant 65 is arranged in a concave 200<sup>f</sup>, since it intervenes at a compression condition between 40f of annular abutments of the opening periphery section 51 of the shielding covering 50, and the shielding covering receiving part 40, a these openings periphery section 51 and 40f [ of annular abutments ] metal touch is also trustworthy, and can obtain a good flow among both.

[0081] In addition, with the gestalt of \*\*\*\* 1 - the 3rd operation, since the shielding covering 50 is attached in the shielding covering receiving part 40 as the connector 10 was covered from the upper part, and the amount of [ of the shielding covering 50 and the shielding covering receiving part 40 ] joint has not become facing up sideways, it excels in the waterproofing engine performance to the water-ed to an engine.

[0082] Moreover, since it has attached by forming an internal-corner-like crevice in a cylinder-head cover H so that the shielding covering receiving part 40 forms, the top face of the shielding covering 50 may be flat-tapped on the top face of a cylinder-head cover H, and shielding covering 50 may hold in the shielding covering receiving part 40, it excels to the waterproofing engine performance at the reason of the joint of the shielding covering 50 and a shielding covering receiving part 40 being arranged in the location which extended far back below from the top face of a cylinder-head cover H. In addition, since it is arranged so that the top face of the shielding covering 50 may be flat-tapped on the top face of a cylinder-head cover H, it excels also in design nature.

[0083]

[Effect of the Invention] As mentioned above, according to the structure of the connection of a shielding wire of this invention according to claim 1 The shielding covering receiving part which has the annular abutment formed in it as enclosed said connected connector in one flank of a conductive cylinder-head cover is prepared. Shielding covering formed in the condition which has the opening periphery section which corresponds with an annular abutment with a conductive ingredient The exfoliation part of shielding of the shielding wire which extends from the connector by which the connector joint was carried out to the connected connector, and its connector with a wrap Since it is attached in the shielding covering receiving part as the opening periphery section is made to contact said annular abutment, Since the exfoliation part of shielding of the shielding wire which extends from a connector covers and is wrapped in in the shielding covering receiving part of a conductive cylinder-head cover, and shielding covering, it excels in the shielding effect of the noise generated from shielding wire.

[0084] In addition, since shielding covering can be attached to a shielding covering receiving part like claim 2 publication as insertion arrangement is carried out to the notching insertion section concerned in shielding wire and it pulls out outside out of shielding covering if the notching insertion section in which insertion arrangement is more possible than the side of said shielding covering receiving part is formed in the side edge section of a shielding covering receiving part for shielding wire, it excels to the assembly nature of the connection of this shielding wire.

[0085] under the present circumstances, when said two or more shielding wire extends from a connector Two or more tubed parts according to claim 3 outer fitting fixed like so that each of that shielding might be contacted electrically at the edge side of each shielding wire, So that said each shielding wire fixed by each [ these ] tubed part may be held with the posture in which insertion arrangement is possible at said notching insertion circles So that it may have further the conductive bracket object which has the plate-like part which carries out connection support of each tubed part concerned and the plate-like part of a bracket object may contact the periphery section of said notching insertion section electrically at least If it is the configuration pinched between the opening periphery sections of the annular abutment of said shielding covering receiving part, and said shielding covering Shielding of each shielding wire will be grounded by the shielding covering receiving part via said plate-like part from each tubed part of a conductive bracket object, and shielding of two or more shielding wire can be grounded easily.

[0086] Moreover, like, if the plate-like part of said conductive bracket object is in contact with the plate-like part concerned from the field of the opposite side with the field according to claim 4 in contact with the periphery section of said notching insertion section, the opening periphery section of shielding covering can make small contact resistance between the shielding covering receiving parts containing the periphery section of said conductive bracket object and the notching insertion section as much as possible, and can raise the noise electric shielding function of shielding of shielding wire.

[0087] It is built over the \*\* bracket object according to claim 5 formed in side opening of the notching insertion section with the conductive ingredient like where said shielding covering receiving part is contacted electrically. Moreover, with the \*\* bracket object If the plate-like part of said conductive bracket

object considers as the configuration supported where the opening periphery section of said shielding covering is electrically contacted from the opposite side Through a \*\* bracket object, it will connect with a shielding covering receiving part electrically, a conductive bracket object will be grounded, and shielding of each shielding wire can be grounded more certainly.

[0088] Furthermore, permeation of the water which passed along between them when it was annularly placed between them by the sealant like, as said connected connector and the periphery of each of said tubed part were enclosed between the opening periphery section of shielding covering, the plate-like part of the annular abutment of a shielding covering receiving part and said conductivity bracket object, or the \*\* bracket object according to claim 6 can be prevented.

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[Translation done.]

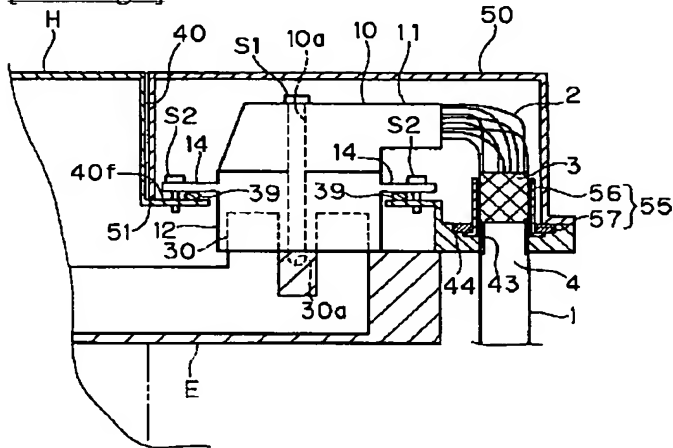
## \* NOTICES \*

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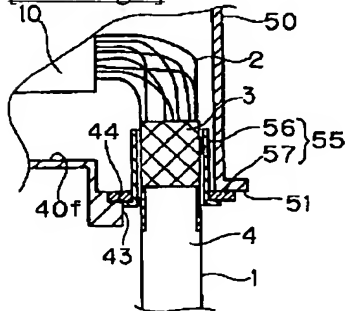
1. This document has been translated by computer. So the translation may not reflect the original precisely.
2. \*\*\*\* shows the word which can not be translated.
3. In the drawings, any words are not translated.

## DRAWINGS

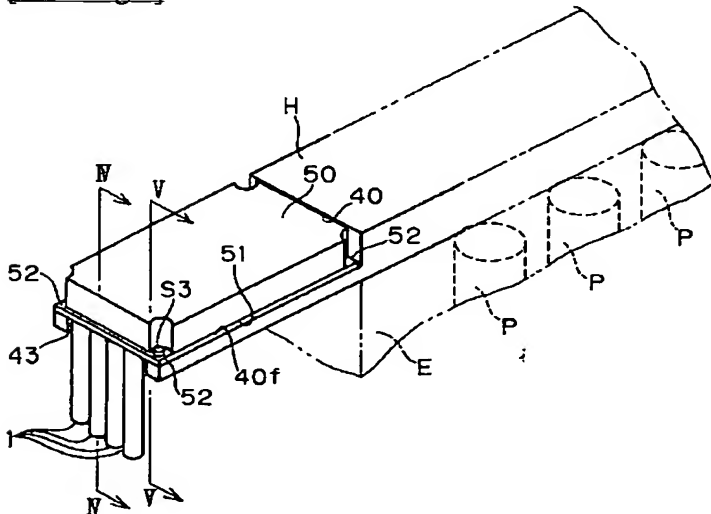
[Drawing 2]



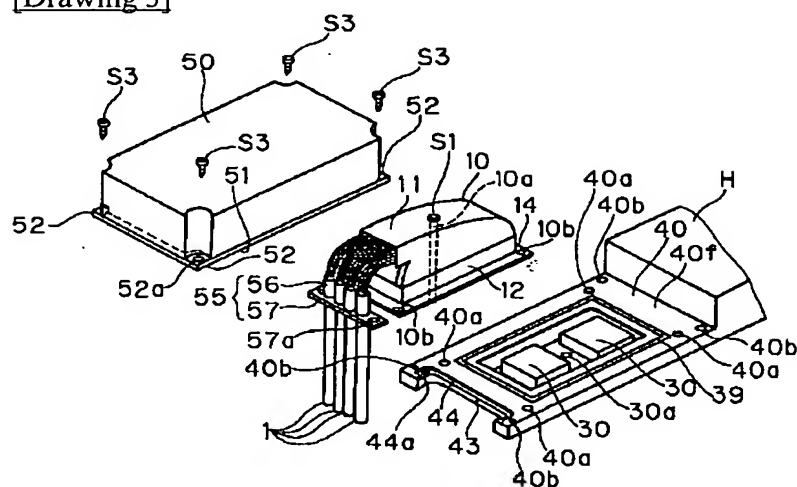
[Drawing 4]



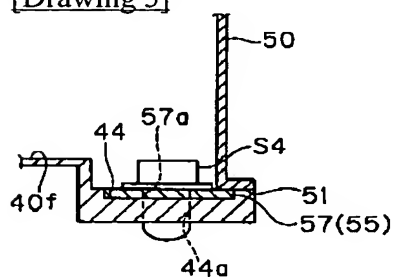
[Drawing 1]



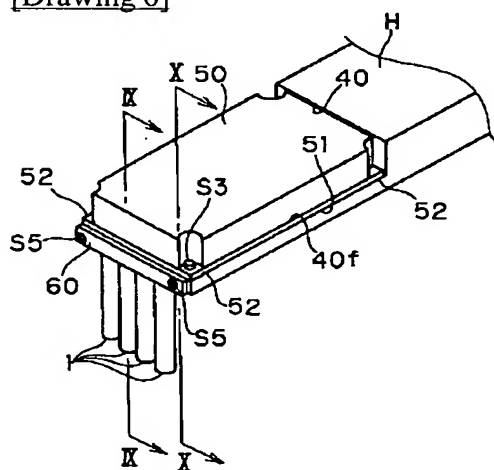
[Drawing 3]



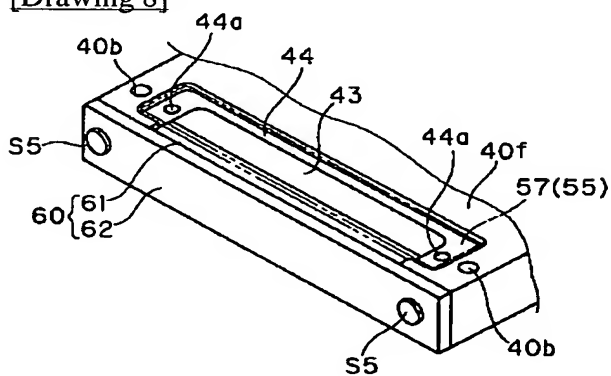
[Drawing 5]



[Drawing 6]

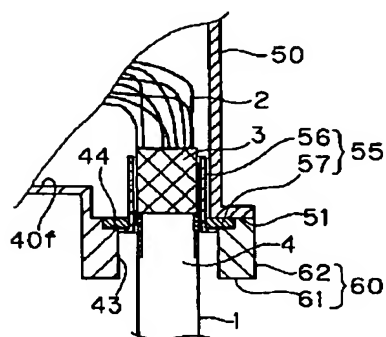


[Drawing 8]

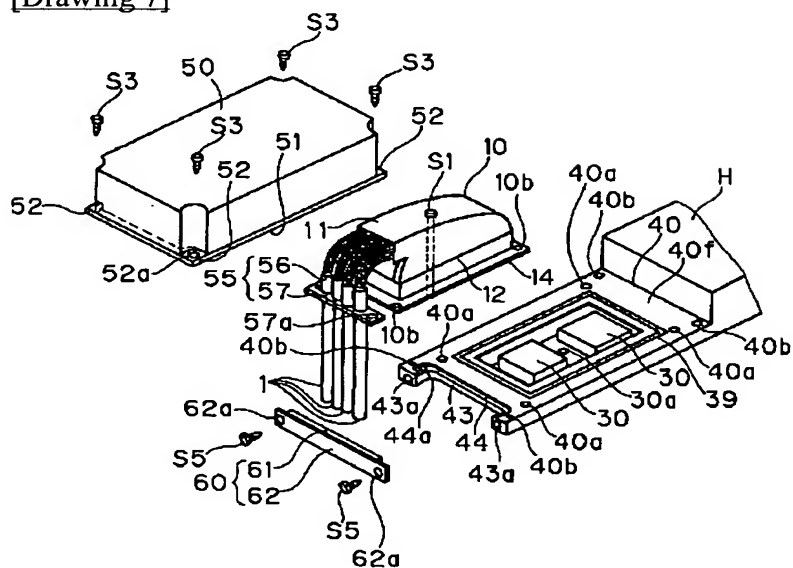


[Drawing 9]

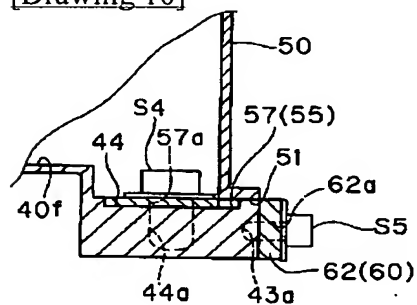




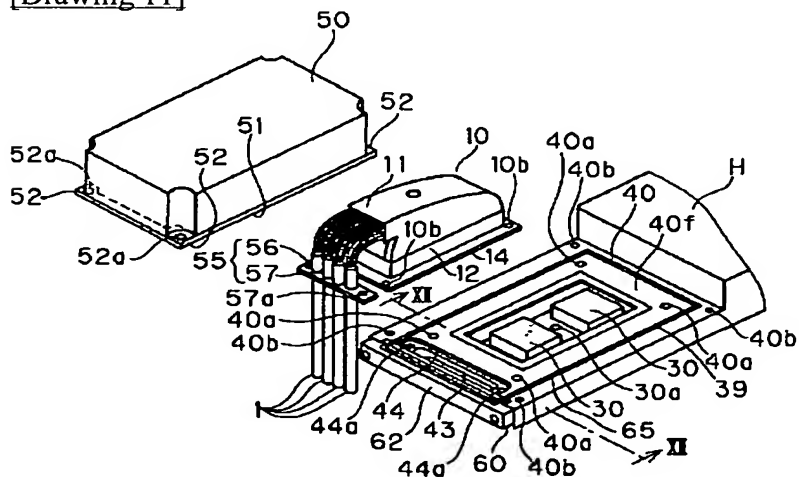
[Drawing 7]



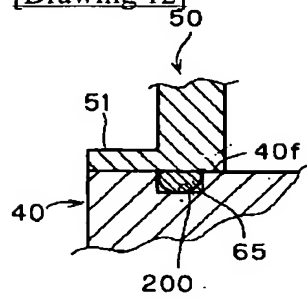
[Drawing 10]



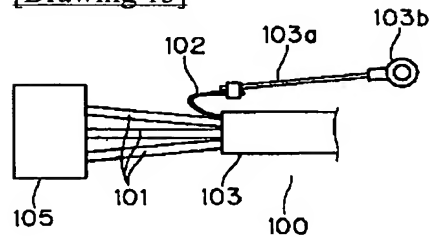
[Drawing 11]



[Drawing 12]



[Drawing 13]



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[Translation done.]